

### PATENT CLAIMS

1. Device for wideband transmission of digital signals between at least one first unit and at least one second unit mobile along a predetermined path relative to said first unit, in particular via non-contacting rotary joints, said first unit comprising:

- 5       - a data source for generating a serial data stream;
- a transmitter for generating electrical signals from said serial data stream from said data source;
- a transmitter conductor array for conducting said electrical signals generated by said transmitter;

10       and said second unit comprising:

- a receiving antenna for tapping electrical signals in a near field of said transmitter conductor array;
- a receiver for receiving the signals tapped by said receiving antenna;
- a data sink for subsequent processing of the signals received by said
- 15       receiver;

**characterized** in that a coding means is provided between said data source and said transmitter, which performs a digital coding of said data stream in such a way that data is transmitted with a minimum of errors via said transmitter, said transmitter conductor array, said receiving antenna, and said

20       receiver.

2. Device according to Claim 1,

**characterized** in that a decoder means is provided between said receiver and said data sink.

3. Device according to Claim 1,  
**characterized** in that said coding means is designed for conversion of spectral characteristics of said data stream in such a way that power can be optionally increased or decreased within predetermined spectral ranges.
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4. Device according to Claim 1,  
**characterized** in that a coding function of said coding means can be dynamically adjusted.
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5. Device according to Claim 1,  
**characterized** in that said coding means is so designed that it contributes additional redundancy into said data stream.
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6. Device according to Claim 1,  
**characterized** in that said coding means is so designed that it replaces data values at defined positions in said data stream.
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7. Device according to Claim 1,  
**characterized** in that said coding means is so designed for increasing or reducing a data rate in said serial data stream.
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8. Device according to Claim 1,  
**characterized** in that said coding means comprises a multiplexer for incorporating further data streams into the serial data stream of said data source.
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9. Device according to Claim 1,  
**characterized** in that said coding means comprises means for enciphering the serial data stream of said data source.

10. Device according to Claim 1,  
**characterized** in that said coding means comprises means for storing data and for outputting data at different data rates to said transmitter in correspondence with actual transmission characteristics of a data transmission path between said transmitter and said receiver.
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11. Device according to Claim 1,  
**characterized** in that said decoder means comprises additional means for signaling incorrectly transmitted data to said coding means via an additionally provided transmission channel, and that said coding means is designed for repeating a transmission of incorrectly received data packages upon request by said decoder means.
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12. Device according to Claim 1,  
**characterized** in that said coding means or said decoder means optionally comprises means for clock regeneration.
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13. Device according to Claim 1,  
**characterized** in that  
at least one filter is optionally assigned to said transmitter or said receiver for adaptation to transmission characteristics of a data transmission path between said transmitter and said receiver.
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14. Device according to Claim 13,  
**characterized** in that said filter can be dynamically adjusted.
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15. Device according to Claim 1,  
**characterized** in that a microcontroller is provided for controlling and diagnosing the device.

16. Device according to Claim 1,  
**characterized** in that the device is self-learning and dynamically adapts itself to respective conditions of operation.

5 17. Method of wideband transmission of digital signals between at least one first unit and at least one second unit mobile along a predetermined path relative to said first unit, in particular via non-contacting rotary joints, said first unit comprising:

- a data source for generating a serial data stream;
- 10 - a transmitter for generating electrical signals from said serial data stream from said data source;
- a transmitter conductor array for conducting said electrical signals generated by said transmitter;

and said second unit comprising:

- 15 - a receiving antenna for tapping electrical signals in a near field of said transmitter conductor array;
- a receiver for receiving the signals tapped by said receiving antenna;
- a data sink for subsequent processing of the signals received by said receiver;

20 **characterized** in that

a coding operation is performed on signals on a transmitter side, and a corresponding decoding operation is performed on signals on a receiver side, so that a transmission of the signals is improved.